

## **Photoelastic Analysis of the Proximal Femur in Deviations of the Mechanical Axis of the Lower Limb**

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**Abstract :** Pathological deviations of the mechanical axis of the lower limbs deeply alter the stress distributions on the femur and tibia and the hip, knee, and ankle articulations. The purpose of this research was to assess the effects of pathological deviations in different levels of the lower limbs in the distribution of stress in the proximal femur region using photoelasticity of plane transmission. For most of the types of deviations studied, the results showed that the internal stress was generally higher in the calcar region than in the trochanteric region, followed by the third distal of the femur head. This study allowed for the development of better criteria for the correction of angular deviations and helped identify the deviations that are most harmful to the mechanical axis in terms of the effects on the bone and the articular effort of the lower limbs. These results will lead to future improvements in studies on prostheses.

**Keywords :** alignment, deviations, inferior limbs, mechanical axis, photoelasticity, stress

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